

WHAT IS CLAIMED IS:

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1. A manufacturing method of a semiconductor device incorporating a passive element, comprising:

10 a redistribution board forming step of forming a redistribution board incorporating the passive element on a base board;

15 a semiconductor element mounting step of mounting at least one semiconductor element on an opposite side surface of the redistribution board formed on the base board with regard to the base board;

20 a base board separating step of separating the base board from the redistribution board and exposing an other surface of the redistribution board; and

a redistribution board mounting step of mounting the redistribution board on a package board via electrode pads exposed from the other surface of the redistribution board.

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30 2. The manufacturing method of the semiconductor device as claimed in claim 1, wherein the semiconductor element mounting step includes a step of filling between the redistribution board and the semiconductor element with an under fill material.

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3. A manufacturing method of a semiconductor device incorporating a passive element, comprising:

5 a redistribution board forming step of forming a redistribution board incorporating the passive element on a base board;

a redistribution board mounting step of mounting the redistribution board formed on the base board on a package board via electrode pads exposed from a surface of the redistribution board;

10 a base board separating step of separating the base board from the redistribution board and exposing an other surface of the redistribution board; and

15 a semiconductor element mounting step of mounting at least one semiconductor element on the redistribution board via electrode pads exposed from the other surface of the redistribution board.

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4. The manufacturing method of the semiconductor device as claimed in claim 3, wherein the redistribution board mounting step includes a step of filling between the redistribution board and the package board with an under fill material.

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5. The manufacturing method of the semiconductor device as claimed in claim 1, wherein the base board is made of a silicon wafer, a plurality of the redistribution boards are integrally formed on said silicon wafer, and th

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redistribution boards are individualized after the base board moving step.

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6. A manufacturing method of a semiconductor device incorporating a passive element, comprising:

10 a redistribution board forming step of forming a redistribution board incorporating the passive element on a base board;

a base board separating step of separating the base board from the redistribution board;

15 a semiconductor element mounting step of mounting at least one semiconductor element on the redistribution board via electrode pads formed on a surface of the redistribution board; and

20 a redistribution board mounting step of mounting the redistribution board on a package board via electrode pads formed on an other surface of the redistribution board.

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7. The manufacturing method of the semiconductor device as claimed in claim 1, wherein the redistribution board forming step includes a
30 step of forming columnar metal members on the electrode pads of the redistribution board formed on the other side of the redistribution board with respect to the base board, and a step of filling between said columnar metal members with insulating
35 resin.

8. The manufacturing method of the semiconductor device as claimed in claim 1, wherein:
5 the base board is made of silicon; and
the base board separating step includes a step of removing the silicon by using etching and grinding together.

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9. The manufacturing method of the semiconductor device as claimed in claim 1, wherein:
15 the base board is made of a sapphire board including a thin organic film formed on a surface where the redistribution board is formed; and
the base board separating step includes a step of irradiating a laser beam to the thin organic
20 film via the sapphire board and vaporizing the thin organic film.

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10. The manufacturing method of the semiconductor device as claimed in claim 1, wherein:
the base board is made of copper or copper alloy; and
30 the base board separating step includes a step of dipping the base board in etchant so as to dissolve only the base board.

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11. The manufacturing method of

semiconductor device as claimed in claim 1, wherein:

the base board includes a water soluble exfoliating layer formed on a surface where the redistribution board is formed; and

5 the base board separating step includes a step of dipping the base board in water and dissolving the exfoliating layer in water.

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12. The manufacturing method of the semiconductor device as claimed in claim 11, wherein the water soluble exfoliating layer is made of
15 potassium bromide.

20 13. The manufacturing method of the semiconductor device as claimed in claim 1, wherein: the base board is made of a water soluble board; and

the base board separating step includes a
25 step of dipping the base board in water and dissolving the exfoliating layer in water.

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14. The manufacturing method of the semiconductor device as claimed in claim 13, wherein the water soluble board is made of potassium bromide.

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15. The manufacturing method of the semiconductor device as claimed in claim 7, wherein the columnar metal members forming step includes a step of depositing copper on the electrode pads in a columnar structure by copper plating.

16. The manufacturing method of the semiconductor device as claimed in claim 7, wherein the columnar metal members forming step includes a step of bonding gold wires with the electrode pads by a wire bonding method.

17. A redistribution board incorporating a passive element comprising:
columnar metal members formed on the electrode pads formed on either a front face or a rear face of the redistribution board and extending in a direction of a thickness of the redistribution board with a predetermined length; and
an insulating resin layer made of insulating resin filled between said columnar metal members.

18. The redistribution board as claimed in claim 17, wherein each of the columnar metal members is made of a copper plated layer deposited in a columnar structure.

19. The redistribution board as claimed
5 in claim 17, wherein each of the columnar metal
members is made of gold wire and bonded to the
electrode pad by a wire bonding method.

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20. A manufacturing method of a
redistribution board incorporating a passive element,
comprising:

15 a step of forming a copper sputter film on
a ceramic board;

a redistribution board forming step of
forming the redistribution board incorporating the
passive element on the copper sputter film;

20 a base board separating step of
exfoliating and separating the ceramic board from
the copper sputter film; and

a step of removing the copper sputter film
by etching and exposing electrodes of the
25 redistribution board.